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10/019,812	05/22/2002	Alexander Fischer	20496-309	8628

7590

04/27/2004

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EXAMINER

PADGETT, MARIANNE L

ART UNIT PAPER NUMBER

1762

DATE MAILED: 04/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/019,812

Applicant(s)

FISCHER ET AL.

Examiner

Marianne L. Padgett

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 January 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 & 19-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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1. Newly submitted amended claim 18, as amended, is newly directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: it is directed to the product of engine blocks, instead of processes for surface alloying cylinders or to apparatus for doing so. Such products may be made or handled by many various techniques, and these apparatus do not produce any necessary structure as claimed. The intent for which an apparatus (as in claim 12) much be capable of performing does NOT necessitate use of that apparatus with any particular reagent materials, only the capability. A product dependent or an apparatus, does NOT necessitate use of any particular materials in that apparatus, and even if it did, if the structure can be made by an alternate process, it is still the same product.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claim 18 is withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

2. The definition and amendments concerning “downhand position”, with supplied references (Exhibit A attached to 1/26/04 response), are acceptable for correcting/defining this term and supporting amendments.

The changes to figure 8 in the replacement sheet are acceptable to the examiner, with associated specification corrections.

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3. ~~Claims 1-17 and 19-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.~~

While the claims are greatly improved in clarity, problems remain.

In claim 1(b) what is “the side of the energy beam” and how does it relate to the workpiece? From overall context, the examiner assumes that the intent is to form the layer of Si powder on the workpiece, with part (b) seeming to indicate that the layer is formed outside the area affected by the beam spot of the energy beam, but the preamble (lines 5-6) indicate powder being fed into the molten surface, not the molten surface being moved or extended to the powder that was formed into a layer as implied by (b). These phrases make conflicting or ambiguous meanings.

In claim 1(c), “the liquefied matrix alloy” lacks any antecedent basis, as nothing in the preceding claim as amended is referred to as either liquefied or as matrix, and the only “alloy” refers to the finished product in line 2.

In claim 12, lines 6-7 “...beam and powder supply device are inserted into the longitudinal axis of the cylinder” (emphasis added), do not make sense with respect to claim 1 from which 12 depends, thus providing capabilities which the apparatus must provide, whether or not it is actually used for the same process. The independent claim is treating the workpiece surface of a whole or partial cylinder, that may or may not be hollow, but the surface of any cylindrical member is generally considered the outside thereof, which is also the only surface if the cylinder is solid. The inside of a hollow cylinder, or its bore surface, is not what claim 1 suggests is being treated. As claim 12 has now defined the apparatus to treat a hollow cylindrical workpiece the apparatus claim makes more sense by its self, although --interior surface of the workpiece-- would be clearer, but claim 12 is required to be dependent on claim 1, which strongly implies that it is the exterior of the workpiece being alloyed. It is noted that fig. 1, 6 and

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9 support the apparent intent of amended claim 12, but if the apparatus is going to depend from the process, consistency is needed.

Claim 16 is apparently setting up alternatives that are not consistent with 1 (b) when the powder may be sprinkled into the melt zone instead of before it, but which are consistent with the claim 1 preamble if one does not follow step (b). See above related discussion, and note claim 16 contradicts applicants' p.15 arguments in their 1/26/04 response. Such ambiguous meanings will be considered covered, if any claimed options are taught or suggested.

4. With respect to the apparatus claims, it is noted that specific materials used in the process claims, such as composition of the powder employed, provide no particular structure to the apparatus, thus do not further limit the apparatus. The clarified and substituted meaning for 'downhand' position, combined with use of linear focus, suggest applicants may intend linear focus to be the of beam spot as created by Hayashi et al (5,447,910), instead of linear scanning of a beam spot to create a linearly treated area, but from applicants' arguments the claims do not appear to be intended to necessitate this, nor do the figures actually show any linear beam spots.

It is noted that all applicant's arguments are based on process limitation, however, except where they necessitate apparatus structure or capabilities, such agreements are not convincing with respect to apparatus claims 12-17 and 19-22.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 12, 15-17, 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashizaki et al (JP 57-185,927) as discussed in section 3 of paper# 9 mailed 7/23/03, optionally in view of Hayashi et al (5,447,910) or McCay et al (6,299,707 B1).

Applicants' arguments concerning process limitations do not remove Hayashizaki et al from reading on the apparatus, especially as the limitations concerning "the side of the energy beam" for powder deposition are ambiguous or can explicitly include deposition as depicted by Hayashizaki et al's figure 3. Hayashizaki et al's localized laser treatment will inherently have heat, melt and solidification zones, and the beam angle is shown as 0° with respect to gravity, with rotation as claimed. The clamping structure shown in fig.1, may be considered consistent with claimed via "working surfaces", as the claims do not limit what may be considered such a surface. Claim 12 differs from Hayashizaki et al in that the Japanese reference as described by the abstract and figures does not provide parameter ranges for energy beam, feed rate and process effects like deposition thickness and cooling rate, however as the sequence of events is as claimed and only the capabilities necessitated in the apparatus, it would have been obvious to optimize the apparatus of Hayashizaki et al according to the materials to be processed therein,

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such that the alloying process' localized heating, melting and solidification would occur as taught, so would have been expected to include capabilities of claimed ranges.

Hayashizaki does not have an explicit teaching of variable rotation speed, however the ability to turn the taught rotation on and off would have been present in the apparatus, and for safe, smooth operation and conventional mechanics, it would have been obvious to construct the apparatus such that the speed can be controlled, i.e. increased, decreased ramped up or down, especially when starting or stopping, since abrupt changes would create discontinuities in the coating.

Optionally, the linear scanning of Hayashizaki et al might be considered to differ from the linear focus of the claims (or not, see section 4 discussion). Hayashi et al (US-'910), shows a conventional lens/beam spot system employed for homogeneously laser treating elongated regions that are being laser treated. As Hayashizaki et al explicitly requires treatment of such elongated regions, it would have been obvious to use a lens system (12) in the Japanese reference as taught by Hayashi et al (US) due the correspondence of the regions being treated, and for the advantage of homogenous treatment as taught by the secondary reference. In Hayashi et al, see the abstract; figures, esp. 1; summary, esp. col.1, lines 51-56 and 66-col. 2, line 5 (which gives the scanning and cylindrical lens options as alternatives); and col.3, lines 7-31.

Alternately McCay et al, discussed in section 5 of paper# 9 provides for a linear focus and would have been an obvious alternative and obvious to combine for analogous reasons as stated therein.

7. Claims 13-14, 19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashizaki et al, optionally in view of Hayashi or McCay et al as applied to

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claims 12, 15-17 and 20-21 above, and further in view of Psiuk et al or Kar et al as discussed in section 4 of paper#9, mailed 7/23/03.

8. Claims 1-2 and 5-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Warnecke, in view of McCay and Hayashizaki et al, optionally considering Kurz et al or Pratt et al, as discussed in section 5 of paper# 9, and above.

While applicants have clarified their claimed powder delivery process to some extent, uncertainties remain as discussed above, and as the phrasing in the claims may include, and does not necessarily exclude powder being delivered into the localized molten zone, as well as outside it, but near, references such as Warnecke, Hayashizaki et al, Kurz et al Pratt et al, remain consistent with the claims. Warnecke teach introducing powdery coating material into the molten region (col.3, lines 1-10; fig.2, ref# 7-14) but do not provide a close up and detailed disclosure of the configuration employed therefore. Hayashizaki et al (discussed above in section 6 and in paper# 9, section 3) provides such details, and they are consistent with claimed configurations and with Warnecke, as the powder supplied by Hayashizaki is illustrated as depositing both around and in the beam spot, i.e. makes a layer before the moving beam spot, and goes directly into the molten zone. As Hayashizaki provides a means for implementing the teachings of Warnecke et al, and is consistent in form and purpose, it would have been obvious to employ, features as described in Hayashizaki in the more general or less detailed disclosure of Warnecke as they have been demonstrated to achieve the goal of the primary reference. Note also that at an end of an alloying procedure, tapering off of deposition and laser irradiation would have been expected in order to leave a smooth finish, i.e. no abrupt seam.



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9. Claims 3-4, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Warnecke, in view of McCay and Hayashizaki et al, optionally considering Kurz et al or Pratt et al as applied to claims 1-2 and 5-11 above, and further in view of Kar et al as applied in section 6 of paper# 9.

10. The rejection over Schwartz et al is removed by the requirement of the alloying powder being Si in the independent claim.

11. Other art of interest due to overlapping inventors and subject matter include patent publications to Feikus [et al], with 6,390,050; 6,713,191; and 2002/0153359 being particularly relevant to non-elected product claim 18.

12. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

13. Claims 1-2, 5-8 & 10 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-7 of U.S. Patent No.

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6,575,130B2 in view of Hayashizaki et al. The patent claims differ by not providing a specific configuration by which the Si powder alloying material is introduced for coating the cylindrical block face, however as discussed above Hayashizaki et al provides for an effective and known means for achieving alloying by such configurations as claimed in the application, and would

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have been obvious to employ to effect limitation as required in the patent due to their analogous procedures.

Note also that while order of claiming various parameters differs, as well as overlapping ranges or how those parameters are set forth (for example the patent claims 1-10 mm<sup>2</sup> focus spots and about 3-4KW, which corresponds to  $3 \times 10^4$  to  $4 \times 10^5$  W/cm<sup>2</sup>; while the application requires  $\leq 10^4$  w/cm<sup>2</sup>), but these are only obvious variations on a procedure.

14. Claims 1-2 and 5-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bady et al, in view of Hayashizaki et al, in view of Kurz et al or Pratt et al, as applied in sections 3 and 9 of paper # 9 (mailed 7/23/03), and above.

With respect to the assignees of this application and Bady et al having the same parent company, the common ownership must be at the time of the inventions, and not a later date. Applicant did not supply this information, so whether or not the patent and application were commonly owned at the time of the invention, cannot yet be determined.

Bady does not supply the powder deposition laser beam configuration as claimed/intended by applicant, but Hayashizaki et al as discussed previously provides details consistent with claimed configurations, that would have been obvious to employ as means for producing taught powder alloying effects, for analogous reasons as applied in above combinations.

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15. Claims 1-2, and 5-12 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-2, 4-10 and 12 of U.S. Patent No. 6,303,897B1 in view of Hayashizaki et al., as discussed above.

Alternately, if the parent company provided common ownership at the time of the invention, this rejection applies.

16. Applicant's arguments filed 1/26/04 and discussed above have been fully considered but they are not persuasive.

Applicant's arguments with respect to claims 1-17 and 19-22 have been considered but are moot in view of the new ground(s) of rejection.

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marianne Padgett whose telephone number is (571) 272-1425.

The examiner can normally be reached on M-F from about 8:30a.m to 4:30p.m.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Beck Shrive, can be reached on 571-272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Padgett/tgd

April 23, 2004

April 25, 2004

A handwritten signature in black ink, appearing to read "Marianne Padgett", with a long horizontal flourish extending to the right.

**MARIANNE PADGETT**  
**PRIMARY EXAMINER**